Release Notes for Router Software Version 11.01

Router Software Version 11.01
Site Manager Software Version 5.01

Part No. 114093 Rev. B
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Bay Networks

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USA Requirements Only

Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

This equipment generates, uses, and can radiate radio-frequency energy. If you do not install and use this equipment according to the instruction manual, this product may interfere with radio communications. This product has been tested and found to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Operating this equipment in a residential area is likely to interfere with radio communications; in which case, the user, at his/her own expense, must correct the interference.

Shielded-compliant cables must be used with this unit to ensure compliance with the Class A limits.

EN 55 022 Declaration of Conformance

This is to certify that the Bay Networks products in this book are shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022:1987 Class A (CISPR 22:1985/BS 6527:1988).

EN 55 022 Declaration of Conformance

This is to certify that the Bay Networks products in this book are shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022:1987 Class B (CISPR 22:1985/BS 6527:1988).

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Voluntary Control Council for Interference (VCCI) Statement

This equipment is in the 1st category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines that are aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when this equipment is used in a residential area or in an adjacent area thereto, radio interference may be caused to equipment such as radios and TV receivers.

Compliance with the applicable regulations is dependent upon the use of shielded cables. The user is responsible for procuring the appropriate cables. Read instructions for correct handling.

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 — Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Notes explicatives du ministère des Communications: limites visant les accessoires

L'étiquette du ministère des Communications du Canada indique que l'appareillage est certifié, c'est-à-dire qu'il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l'appareillage fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer l'appareillage, s'assurer qu'il peut être branché aux installations du service de télécommunications local. L'appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d'un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu'une telle installation n'assure pas un service parfait en tout temps.

Les réparations de l'appareillage certifié devraient être confiées à un service d'entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l'utilisateur ou de mauvais fonctionnement de l'appareillage, le service de télécommunications peut demander le débranchment de l'appareillage.

Pour leur propre sécurité, les utilisateurs devraient s'assurer que les mises à la terre des lignes de distribution d'électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) does not exceed the Class A limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Réglement sur le brouillage radioélectrique du ministère des Communications

Cet appareil numérique (Access Feeder Node, Access Link Node, Access Node, Access Stack Node, Backbone Concentrator Node, Backbone Concentrator Node Switch, Backbone Link Node, Backbone Link Node Switch, Concentrator Node, Feeder Node, Link Node) respecte les limites de bruits radioélectriques visant les appareils numériques de classe A prescrites dans le Réglement sur le brouillage radioélectrique du ministère des Communications du Canada.

T1 Service Compliance Statements

T1 Service

NOTE: This T1 Service notice applies to you only if you have received a single or dual port Multi-Channel T1 (MCT1) Link Module (which provides an internal CSU).

This equipment complies with Part 68 of FCC Rules. Please note the following:

1. You are required to request T1 service from the telephone company before you connect the CSU to a T1 network. When you request T1 service, you must provide the telephone company with the following data:
   - The Facility Interface Code

     Provide the telephone company with both codes below:

     — 04DU9-B (1.544 MB D4 framing format)
     — 04DU9-C (1.544 MB ESF format)

     The telephone company will select the code it has available.
   - The Service Order Code: 6.0F
   - The required USOC jack: RJ48C
   - The make, model number, and FCC Registration number of the CSU.
2. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. The telephone company will notify you in advance of such changes to give you an opportunity to maintain uninterrupted telephone service.
3. If your CSU causes harm to the telephone network, the telephone company may temporarily discontinue your service. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible and will be informed of your right to file a complaint with the FCC.
4. If you experience trouble with the CSU, please contact Bay Networks Technical Response Center in your area for service or repairs. Repairs should be performed only by service personnel authorized by Bay Networks, Inc.

United States	1-800-2LAN-WAN
Valbonne, France	(33) 92-96-69-68
Sydney, Australia	(61) 2-9927-8880
Tokyo, Japan	(81) 3-5402-7041
5. You are required to notify the telephone company when you disconnect the CSU from the network and when you disconnect the BCNX or BLNX from the network.

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Contents

Technical Support and Online Services

Bay Networks Customer Service xvi
Bay Networks Information Services xvii
World Wide Web xvii
Customer Service FTP xvii
Support Source CD xviii
CompuServe xviii
InfoFACTS xix
How to Get Help xix

Release Notes for Router Software Version 11.01

Upgrading to Version 11.01 1
New Features 2
Bay Command Console 2
Platform Requirements 2
Configuring Protocols, Interfaces, and Link Modules 2
Bisync over TCP/IP (BOT) Router Platforms 5
Dial Services 5
Standby 5
Callback 5
Multirate Service for the DMCT1 on the ASN Platform 5
Enhanced Traffic Filters 5
Netboot Enhancement 6
QLLC Added to X.25 Services 6
RMON Alarm and Event Sub Agent 6
Router Redundancy 6
Software Encryption 6
Technician Interface Diags Command 7

Token Ring LAN Emulation Support 7
New Hardware Products 7
AN200 7
DSU/CSU Serial Adapter Module 8
Serial CLAM Router 8
Single Mode FDDI Hybrid Net Module 8
Dual AC Power Supply for BCN 9
DMCT1 for ASN and 5380/5580 9
Guidelines for Using Version 11.01 10
ARN Memory Requirements 10
Network Booting on DSU/CSU Interfaces 10
Using the Technician Interface ARN Installation Script 10
Cycling Power to the ARN 11
Using the Technician Interface Packet Capture Script on an ARN 11
Using the BCC 12
Configuring NTP Using the Technician Interface 12
IP Equal-Cost Multipath Routing 12
Backing Up Bandwidth-on-Demand Circuits 12
DCM Software Image and Router Software Compatibility 13
Support for Banyan 80C4 ISAP 13
Using IPX Dial Optimized Routing (DOR) 13
Inactivity Mode 13
RIP/SAP Pace and Packet Size Parameters 13
Diagnostic Packets and Time Synchronization 13
Using Frame Relay Service Records 14
Protocols Supported 16
Standards Supported 19
Supported Flash Memory Cards 24

Tables

Table 1. ARN Module Numbers for packet.bat 11
Table 2. Standards Supported by Version 11.01 19
Table 3. Approved Flash Memory Cards 24

Technical Support and Online Services

To ensure comprehensive network support to our customers and partners worldwide, Bay Networks Customer Service has Technical Response Centers in key locations around the globe:

- Billerica, Massachusetts
- Santa Clara, California
- Sydney, Australia
- Tokyo, Japan
- Valbonne, France

The Technical Response Centers are connected via a redundant Frame Relay Network to a Common Problem Resolution system, enabling them to transmit and share information, and to provide live, around-the-clock support 365 days a year.

Bay Networks Information Services complement the Bay Networks Service program portfolio by giving customers and partners access to the most current technical and support information through a choice of access/retrieval means. These include the World Wide Web, CompuServe, Support Source CD, Customer Support FTP, and InfoFACTS document fax service.

Bay Networks Customer Service

If you purchased your Bay Networks product from a distributor or authorized reseller, contact that distributor's or reseller's technical support staff for assistance with installation, configuration, troubleshooting, or integration issues.

Customers can also purchase direct support from Bay Networks through a variety of service programs. As part of our PhonePlus™ program, Bay Networks Service sets the industry standard, with 24-hour, 7-days-a-week telephone support available worldwide at no extra cost. Our complete range of contract and noncontract services also includes equipment staging and integration, installation support, on-site services, and replacement parts delivery -- within approximately 4 hours.

To purchase any of the Bay Networks support programs, or if you have questions on program features, use the following numbers:

Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 436-8880 (direct)	(508) 670-8766
Europe	(33) 92-968-300	(33) 92-968-301
Asia/Pacific Region	(612) 9927-8800	(612) 9927-8811
Latin America	(407) 997-1713	(407) 997-1714

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

Bay Networks Information Services provide up-to-date support information as a first-line resource for network administration, expansion, and maintenance. This information is available from a variety of sources.

World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

A special benefit for contracted customers and resellers is the ability to access the Web Server to perform Case Management. This feature enables your support staff to interact directly with the network experts in our worldwide Technical Response Centers. A registered contact with a valid Site ID can

- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *http://www.baynetworks.com*. Customer Service is a menu item on that home page.

Customer Service FTP

Accessible via URL *ftp://support.baynetworks.com* (134.177.3.26), this site combines and organizes support files and documentation from across the Bay Networks product suite, including switching products from our Centillion™ and Xylogics® business units. Central management and sponsorship of this FTP site lets you quickly locate information on any of your Bay Networks products.

Support Source CD

This CD-ROM -- sent quarterly to all contracted customers -- is a complete Bay Networks Service troubleshooting knowledge database with an intelligent text search engine.

The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

CompuServe

For assistance with noncritical network support issues, Bay Networks Information Services maintain an active forum on CompuServe, a global bulletin-board system. This forum provides file services, technology conferences, and a message section to get assistance from other users.

The message section is monitored by Bay Networks engineers, who provide assistance wherever possible. Customers and resellers holding Bay Networks service contracts also have access to special libraries for advanced levels of support documentation and software. To take advantage of CompuServe's recently enhanced menu options, the Bay Networks Forum has been re-engineered to allow links to our Web sites and FTP sites.

We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you are on line with your CompuServe account, you can reach us with the command **GO BAYNET**.

InfoFACTS

InfoFACTS is the Bay Networks free 24-hour fax-on-demand service. This automated system has libraries of technical and product documents designed to help you manage and troubleshoot your Bay Networks products. The system responds to a fax from the caller or to a third party within minutes of being accessed.

To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside North America, toll calls can be made to 1-408-764-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

How to Get Help

Use the following numbers to reach your Bay Networks Technical Response Center:

Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
Santa Clara, CA	1-800-2LANWAN	(408) 764-1188
Valbonne, France	(33) 92-968-968	(33) 92-966-998
Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Release Notes for Router Software Version 11.01

This document contains the latest information about Bay Networks® Router Software Version 11.01.

These release notes include information about

- Upgrading to Version 11.01
- New Features
- Guidelines
- Protocols Supported
- Standards Supported
- Supported Flash Memory Cards

Upgrading to Version 11.01

To upgrade your router software to Version 11.01, or to upgrade your Site Manager software to Version 5.01, refer to *Upgrading Routers from Version 7-10.xx to Version 11.0* for instructions. This document is included in your upgrade package.

New Features

Bay Networks has implemented the following new features in the router software for Release 11.01.

Bay Command Console

Release 11.01 of the router software includes the first phase of the Bay Command Console (BCC™), which is a new command line interface for Bay Networks devices. With this release, you can use the BCC to configure BLN® or BCN® routers.

Since this is a trial version of the BCC and we expect the interface to evolve and expand substantially, we are not documenting the current BCC commands in our protocol-specific documentation.

If you want to try the BCC interface, first read about the platform requirements and the list of protocols, interfaces, and link modules you can configure. For information on using the BCC see "Guidelines for Using Version 11.01" later in these release notes.

Platform Requirements

The BCC runs on BN® platforms (BLN and BCN routers) with FRE®-2 processor modules that each have 16 MB DRAM installed.

Configuring Protocols, Interfaces, and Link Modules

You can use BCC commands to configure the following protocols, interfaces, and link modules:

Global Protocols

- IP (including access policies)
- ARP
- IGMP
- OSPF (including accept and announce policies)
- BGP (including accept and announce policies)
- TELNET

- TFTP
- FTP
- NTP
- SNMP

Interface Protocols

- IP
- ARP
- RIP
- OSPF
- Router Discovery (RDISC)
- Wellfleet Standard Point-to-Point
- PPP

Interfaces (see also the list of link modules supporting these interface types)

- Console
- Ethernet
- Token Ring
- Synchronous
- FDDI
- HSSI
- Virtual

Link Modules

Module ID	wfName	Description
40	dst416	Model 5740 Dual Sync with Token Ring
80	sync	Model 5280 Quad Sync
118	sse	Model 5410 Single Sync with Ethernet
132	enet3	Model 5505 Dual Ethernet
162	qenf	Model 5450 Quad Ethernet without hardware filters
164	qef	Model 5950 Quad Ethernet with hardware filters
176	dtok	Model 5710 Dual Token Ring
192	wffddi2m	Model 5930 Multimode FDDI
193	wffddi1m	Model 5943 Hybrid FDDI with single mode on connector B
195	wffddi1s	Model 5942 Hybrid FDDI with single mode on connector A
196	wffddi2mf	Model 5946 Multi FDDI with hardware filters
197	wffddi1mf	Model 5949 Hybrid FDDI with hardware filters and single mode on connector B
199	wffddi1sf	Model 5948 Hybrid FDDI with hardware filters and single mode on connector A
225	shssi	Model 5295 HSSI
232	esafnf	Model 5431 Dual Sync Dual Ethernet, no hardware filters
236	esaf	Model 5531 Dual Sync Dual Ethernet with 2-CAM filters and Model 5532 Dual Sync Dual Ethernet with 6-CAM filters
256	qtok	Model 50021 Quad Token Ring
4352	osync	Model 5008 Octal Sync
4354	comp128	Model AG2104038 Octal Sync with 128-context compression
4864	de100	Model 50038 100Base-T Ethernet

After you've used the BCC, we would welcome your response. Please check out the BCC Web Site at the following URL, where you can leave us a message:

http://support.baynetworks.com/library/tpubs/bccfeedbk

Bisync over TCP/IP (BOT) Router Platforms

Release 11.01 allows you to run BOT on the new Advanced Remote Node™ (ARN™) with an installed serial adapter module. With this addition, BOT now operates on four Bay Networks router platforms: AN®, ASN™, BN, and ARN. Refer to *Configuring BSC Transport Services* for information about configuring BOT on these platforms.

Dial Services

We have added the following new features to the dial services software. For information on how to use these features, refer to the *Release 11.01/5.01 Documentation Change Notice*.

Standby

The expansion of enterprise networks to remote branch sites requires reliable access to these sites. Therefore, it is important to have alternate connections to the remote sites in case a primary connection fails. To provide alternate connections, you can use standby circuits. A standby circuit is a special type of demand circuit that gives the router an alternate path to the destination. The destination can be a different interface at the primary circuit's original site or an entirely different site.

Callback

With this feature, you can configure a router to “call back” an incoming caller. This implementation includes authentication and security features.

Multirate Service for the DMCT1 on the ASN Platform

Multirate service is available for all three dial services on the ASN platform using the Dual MCT1 (DMCT1) Net Module. In previous releases, multirate service using the DMCT1 was available only on the BN platform. For information about how to configure multirate, refer to *Configuring Dial Services*.

Enhanced Traffic Filters

For the IP protocol only, Release 11.01 provides new predefined fields as well as 127 filter rules per interface. For information about how to use the new traffic filter features, refer to the *Release 11.01/5.01 Documentation Change Notice*.

Netboot Enhancement

ASN and 5380/5580 platforms with a QSYNC net module can now obtain a router image and configuration file over any of the four QSYNC interfaces to a managed network. For information about boot configuration options, setting up a UNIX boot server, and configuring network booting on an ASN router, refer to *Connecting ASN Routers to a Network*.

QLLC Added to X.25 Services

Release 11.01 supports DLSw over X.25 links using the Qualified Logical Link Control (QLLC) protocol. QLLC is the Layer 4 protocol that transfers SNA data over an X.25 network. Refer to *Configuring X.25 Services* for information on configuring QLLC.

RMON Alarm and Event Sub Agent

Release 11.01 supports the Alarm and Event groups of Remote Network Monitoring Management Information Base (RMON MIB -- RFC 1757). The Alarm group logs threshold triggered events. The Event group sends traps and log events to the log table. For information about how to use these new features, refer to *Configuring SNMP, RMON, BOOTP, DHCP, and RARP Services.*

Router Redundancy

We have enhanced router redundancy to make it easier to configure, and to include hot standby. For information on router redundancy, see *Configuring Router Redundancy.* Note that the 11.01 release of router redundancy is not compatible with the 10.0 release.

Software Encryption

Release 11.01 includes software encryption of PPP and Frame Relay data for the AN, BN, ASN, and 5380/5580 platforms. Software encryption scrambles PPP and Frame Relay data to provide confidentiality and authentication across WAN links. For information on software encryption, refer to *Configuring Software Encryption*. Note that software encryption is not supported across dial services. Also, if you configure software encryption on a primary link and the link fails, the backup line will not include software encryption when it comes up.

You can configure a Frame Relay PVC that uses encryption with a PPP dial backup circuit. If the primary line fails, traffic travels unencrypted over the PPP backup circuit. For more information about using encryption with dial backup, refer to *Configuring Software Encryption.*

Technician Interface Diags Command

The Technician Interface provides a new command option on BayStack routers for disabling and enabling diagnostics at powerup. Disabling the diagnostics results in a faster boot time. For information on this command, refer to the *Release 11.01/5.01 Documentation Change Notice*.

Token Ring LAN Emulation Support

Release 11.01 supports LAN Emulation (LANE) for Token Ring as defined by the ATM Forum LAN Emulation Over ATM specification (Version 1.0). This support includes a number of new parameters and additional options for several existing parameters. For information on LANE, see the *Release 11.01/5.01 Documentation Change Notice*.

New Hardware Products

This section describes new hardware products that support Release 11.01/5.01.

AN200

The AN200 is a fixed configuration AN router containing one Ethernet port and two ISDN ports. This product is for the Japanese ISDN leased line environment. The AN200 supports the following protocols:

- IP, IP RIP
- IPX, IPX RIP, and SAP
- AppleTalk, AppleTalk RTMP
- Bridge
- Wellfleet HDLC
- PPP
- ISDN (dial backup, dial-on-demand, and bandwidth-on-demand)

- Data compression
- Traffic prioritization and traffic filters

AN200 does not support the following protocols:

- APPN
- DLSw
- OSPF
- OSI
- X.25

You can remotely boot an AN200 over an ISDN leased connection using PPP or Bay Networks proprietary WAN protocol. For information about the AN200, refer to *Installing and Operating AN200 Router*s (114733-A Rev. A) and *Connecting AN200 Routers to a Network* (114734-A Rev. A).

DSU/CSU Serial Adapter Module

Release 11.01 supports the new DSU/CSU serial adapter module for the AN. For information on this feature, refer to the *Release 11.01/5.01 Documentation Change Notice* and *Installing Upgrade Modules in AN Routers* (112257 Rev. D).

Serial CLAM Router

Release 11.01 provides software support for the Serial CLAM router, a small office/home office router with one Ethernet port and either an ISDN or a serial port. The CLAM supports IP and IPX only over ISDN or Frame Relay. For documentation on the CLAM router, see the *CLAM Router Manual* (CM1001160).

Single Mode FDDI Hybrid Net Module

This release supports a new net module that mixes multimode and single mode FDDI. For information on this net module, refer to *Quick Installation and Reference for the System 5000 Net Modules* (112769 Rev. B)

Dual AC Power Supply for BCN

This release supports an AC power source for the BCN. For information about the AC power source for the BCN, refer to *Installing and Maintaining BN Platforms* (109352-E Rev. A).

DMCT1 for ASN and 5380/5580

This release supports the Dual MCT1(DMCT1) net module for the ASN and 5380/5580 platforms. For information about this feature, refer to the *Release 11.01/5.01 Documentation Change Notice* and *Installing the DMCT1 Net Module in a System 5000* (114705-A Rev. A) or *Installing the DMCT1 Net Module in an ASN Platform* (114706-A Rev. A).

Guidelines for Using Version 11.01

Note the following guidelines when using Version 11.01.

ARN Memory Requirements

The following features require a minimum DRAM configuration of 8 Mbytes:

- DLSw
- ISDN BRI
- Token Ring base or expansion module configurations

Network Booting on DSU/CSU Interfaces

AN and ANH DSU/CSU interfaces do not support network booting in Version 11.01. The ARN DSU/CSU supports network booting only over interfaces configured for 64-Kb/s Clear Channel service.

Using the Technician Interface ARN Installation Script

You can use the *inst_arn.bat* script from a Technician Interface prompt on the router to configure all except the following ARN interfaces:

- V.34 modem adapter module
- ISDN U adapter module
- ISDN S/T adapter module

Refer to *Installing and Operating BayStack ARN Routers* for information on using the ARN installation script Quick-Start procedure.

Refer to *Release 11.01/5.01 Documentation Change Notice* for information about configuring V.34 modem and ISDN adapter module interfaces.

Cycling Power to the ARN

To ensure a complete power cycle, we recommend that you wait at least 4 seconds between powering off the ARN and powering it back on.

Caution: Cycling power to the ARN too quickly could cause an error.

Using the Technician Interface Packet Capture Script on an ARN

The Technician Interface Packet Capture script (*packet.bat*) now prompts for the module number of the interface on a BayStack ARN. Enter the appropriate module number from Table 1, except for synchronous interfaces, where the module number should always be 1.

Table 1. ARN Module Numbers for packet.bat

ARN Interface	Technician Interface Module Number
Base module (XCVR1 or TOKEN1)	1
First WAN adapter module interface (COM1 or ISDN1)	2
Second WAN adapter module interface (COM2 or ISDN2)	3
Expansion module interface (XCVR2, TOKEN2, or COM3-5)	4

Note: For all synchronous interfaces, enter module number 1. For serial interfaces that are configured for other WAN services (for example, BOT or ISDN interfaces), enter the actual module number (2 or 3).

Using the BCC

Before entering the BCC initialization command (**bcc-trial**) at the Technician Interface prompt of a BN router, back up your existing configuration file(s) to another location.

Caution: BCC configuration and **source** commands make immediate changes to the active device configuration. Read about the **source** command in *Using the Bay Command Console*.

After starting the BCC, enter **help** at the bcc> prompt for initial instructions. You can obtain online help for different types of information (lists of configurable objects, attributes, and attribute values; current attribute values; configuration data; and so on). For details on how to use the BCC interface, refer to *Using the Bay Command Console*. Refer also to the *Release 11.01/5.01 Documentation Change Notice* and *Read Me First: Router Software 11.01 and Site Manager 5.01*.

Configuring NTP Using the Technician Interface

When you use the Technician Interface to configure the Network Time Protocol (NTP), you must configure NTP on each slot on the router to ensure that NTP initializes correctly.

You can configure NTP on each slot by setting the following MIB variable from the Technician Interface:

set *wfProtocols.wfNTPLoad.0 0xffffffff*

commit

IP Equal-Cost Multipath Routing

Version 11.01 does not support IP equal-cost multipath routing for RIP and OSPF.

Backing Up Bandwidth-on-Demand Circuits

You can back up a bandwidth-on-demand circuit by using the standby circuit feature. Refer to the *Release 11.01/5.01 Documentation Change Notice* for a detailed description of standby circuits.

DCM Software Image and Router Software Compatibility

To run RMON on an AN or ANH router, the DCM software image must be Version 1.4. The Version 1.4 DCM software image is backward-compatible with Router Software Versions 9.0*x*, 10.0*x*, and 11.0. However, if you attempt to run RMON on a Version 11.01 router that has a DCM software image earlier than Version 1.4, you will get an error message from the RMON Summary application telling you that the router does not support RMON.

Support for Banyan 80C4 ISAP

Bay Networks routers now support the Banyan 80C4 ISAP on Ethernet.

Using IPX Dial Optimized Routing (DOR)

The following information will help you use DOR optimally.

Inactivity Mode

We recommend that you set the Inactivity Mode parameter to Transmit Only. Any other setting causes the inactivity mode to reset when the receive end can't filter Serialization, Watchdog, and Keep Alive packets for NORESET. These packets could keep the demand line active for long periods of time.

RIP/SAP Pace and Packet Size Parameters

As IPX routes and services grow in number, IPX RIP and SAP packets may be clipped when an IPX DOR circuit comes up or changes state. To stop the clipping, reduce the value of the Pace parameter for RIP and SAP packets, or change the RIP/SAP packet size for the IPX DOR circuit. You should reduce the RIP/SAP Pace parameter for IPX DOR circuits to accommodate the number of IPX routes and services in the network.

Diagnostic Packets and Time Synchronization

No default priority queuing filters exist for IPX diagnostics packets or packets used in Netware Directory Services (NDS) time synchronization. You can configure a priority queueing filter to keep IPX diagnostic packets from bringing up a demand line. However, since the Bay Networks IPX ping packet is a diagnostic packet, the filter will affect it as well.

NDS time synchronization packets are treated as data packets. You can configure NetWare servers for larger polling intervals to reduce the frequency of bringing up the line for time synchronization packets.

Using Frame Relay Service Records

The following sections compare service records with the access modes that formerly defined Bay Networks Frame Relay services.

Group Access Mode

In group access mode, upper-layer protocols treat each Frame Relay network interface as a single access point to the switched network. The upper-layer protocols use a single network address to send all traffic destined for the switched network to the Frame Relay network interface. When you configure each router, you assign only one network address -- for example an IP or IPX address -- to the Frame Relay interface, not to each PVC. The Data Link Control Management Interface (DLCMI) dynamically configures PVCs; you do not need to explicitly configure them.

Group access mode advantages are that it

- Supports all protocols
- Simplifies network addressing because you define and associate only one protocol address with the Frame Relay interface
- Is easy to configure
- Conserves resources because it requires a small number of circuits

Its disadvantages are that it

- Allows only one group of PVCs per Frame Relay connection
- Uses a large amount of buffer space during broadcasts
- Increases customer costs because it has only a single broadcast domain

Service Records and Group Mode

Service records retain all of the advantages of group mode. Service records also

- Allow multiple groups of PVCs per Frame Relay connection
- Enable you to gather multiple PVCs for each network protocol into a separate group or service record, thereby reducing the number of buffers needed per circuit during broadcasts
- Lower customer costs by creating multiple broadcast domains

Using service records to define Frame Relay removes the need to think in terms of group mode.

Service Records and Direct Access Mode

In direct access mode, upper-layer protocols treat the Frame Relay network as a series of point-to-point connections. The upper-layer protocols view each PVC as an individual network interface.

Direct access mode advantages are that it

- Limits broadcasts to one PVC
- Enables multiple layer-three networks per interface

Direct access mode disadvantages are that it

- Creates a new Frame Relay circuit for each PVC, consuming router resources
- Allows only one PVC per network

Service Records and Direct Mode

A service record with a single PVC is the same as a direct access mode PVC. Using service records to define Frame Relay removes the need to think in terms of direct mode.

Service Records and Hybrid Access Mode

Hybrid access mode, as its name implies, combines characteristics of group and direct access modes. It works only for non-fully meshed network configurations that use both bridging and routing over a single Frame Relay interface. This mode is also best for spanning tree bridging.

You configure hybrid mode by enabling the hybrid mode service record parameter. See Chapter 3, “Customizing Frame Relay,” for instructions.

Default Service Record

The router creates the first service record automatically. This first service record is called the *default service record*. Any PVCs that are not associated with a configured service record use the default service record.

Protocols Supported

Version 11.01 of Bay Networks Router Software supports the following bridging/routing protocols and router configuration features:

- AppleTalk and AppleTalk Update-based Routing Protocol (AURP)
- Advanced Peer-to-Peer Networking (APPN)
- Asynchronous transfer mode (ATM)
- ATM Data Exchange Interface (ATMDXI)
- ATM LAN Emulation (802.3 and 802.5)
- Binary Synchronous Communication Type 3 (BSC3)
- Bootstrap Protocol (BOOTP)
- Border Gateway Protocol (BGP-3 and BGP-4)
- Bisync over TCP (BOT)
- Classless interdomain routing (CIDR)
- Data compression
- Data link switching (DLSw)
- DECnet Phase IV Routing Protocol
- Distance Vector Multicast Routing Protocol (DVMRP)
- Dynamic Host Configuration Protocol (DHCP)
- Exterior Gateway Protocol-2 (EGP-2)
- Frame Relay
- File Transfer Protocol (FTP)

- HP Probe Protocol
- Integrated Services Digital Network (ISDN)
- Interface redundancy
- Internet Gateway Management Protocol (IGMP)
- Internet Protocol (IP)
- Internet Control Message Protocol (ICMP)
- Internet Packet Exchange (IPX) Protocol
- Internet Service Provider Mode
- Internet Stream Protocol (ST2)
- Learning Bridge Protocol
- Logical Link Control 2 (LLC2) Protocol
- Native Mode LAN (NML) Protocol
- Network Core Protocol
- Network Time Protocol (NTP)
- Open Shortest Path First (OSPF) Protocol
- Open Systems Interconnection (OSI) Routing Protocol
- Point-to-Point Protocol (PPP)
- Protocol prioritization
- Qualified Logical Link Control (QLLC)
- RaiseDTR dialup
- Routing Information Protocol (RIP)
- Router discovery
- Router redundancy
- Service Advertizement Protocol (SAP)
- Simple Network Management Protocol (SNMP)
- Source Routing Bridge Protocol
- Spanning Tree Protocol
- Switched multimegabit data service (SMDS)

- Synchronous Data Link Control (SDLC)
- Telnet Protocol (Inbound and Outbound)
- Transmission Control Protocol (TCP)
- Transparent Bridge
- Transparent-to-Source Routing Translation Bridge
- Trivial File Transfer Protocol (TFTP)
- V.25BIS dialup
- Virtual Networking System (VINES)
- X.25 Protocol
- XMODEM and YMODEM Protocols
- Xerox Network Systems (XNS) Protocol

Standards Supported

Table 2 lists the Request for Comments (RFCs) and other standards documents with which Version 11.01 complies. Version 11.01 may support additional standards that are not listed in this table.

Table 2. Standards Supported by Version 11.01

Standard	Description
ANSI T1.404	DS3 Metallic Interface Specification
ANSI X3t9.5	Fiber Distributed Data Interface (FDDI)
Bellcore FR-440	Transport Systems Generic Requirements (TSGR)
Bellcore TR-TSY-000009	Asynchronous Digital Multiplexes, Requirements and Objectives
Bellcore TR-TSY-000010	Synchronous DS3 Add-Drop Multiplex (ADM 3/X) Requirements and Objectives
IEEE 802.1	Logical Link Control (LLC)
IEEE 802.3	Carrier Sense Multiple Access with Collision Detection (CSMA/CD)
IEEE 802.5	Token Ring Access Method and Physical Layer Specifications
IEEE 802.10	Bridge with Spanning Tree
ITU Q.921	ISDN Layer 2 Specification
ITU Q.921	ISDN Layer 3 Specification
ITU X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuits
RFC 768	User Datagram Protocol (UDP)
RFC 791	Internet Protocol (IP)
RFC 792	Internet Control Message Protocol (ICMP)
RFC 793	Transmission Control Protocol (TCP)
RFC 813	Window and Acknowledgment Strategy in TCP

(continued)

Table 2. Standards Supported by Version 11.01 *(continued)*

Standard	Description
RFC 826	Ethernet Address Resolution Protocol
RFC 827	Exterior Gateway Protocol (EGP)
RFC 854	Telnet Protocol Specification
RFC 855	Telnet Option Specification
RFC 856	Telnet Binary Transmission
RFC 857	Telnet Echo Option
RFC 858	Telnet Suppress Go Ahead Option
RFC 859	Telnet Status Option
RFC 860	Telnet Timing Mark Option
RFC 861	Telnet Extended Options: List Option
RFC 863	Discard Protocol
RFC 877	Transmission of IP Datagrams over Public Data Networks
RFC 879	TCP Maximum Segment Size and Related Topics
RFC 888	"STUB" Exterior Gateway Protocol
RFC 894	Transmission of IP Datagrams over Ethernet Networks
RFC 896	Congestion Control in IP/TCP Internetworks
RFC 903	Reverse Address Resolution Protocol
RFC 904	Exterior Gateway Protocol Formal Specification
RFC 919	Broadcasting Internet Datagrams
RFC 922	Broadcasting Internet Datagrams in Subnets
RFC 925	Multi-LAN Address Resolution
RFC 950	Internet Standard Subnetting Procedure
RFC 951	Bootstrap Protocol
RFC 959	File Transfer Protocol

(continued)

Table 2. Standards Supported by Version 11.01 *(continued)*

Standard	Description
RFC 994	Protocol for Providing the Connectionless-mode Network Service
RFC 1009	Requirements for Internet Gateways
RFC 1027	Using ARP to Implement Transparent Subnet Gateways
RFC 1042	Transmission of IP over IEEE/802 Networks
RFC 1058	Routing Information Protocol
RFC 1075	Distance Vector Multicast Routing Protocol (DVMRP)
RFC 1076	Redefinition of Managed Objects for IEEE 802.3 Repeater Devices (AN Hubs only)
RFC 1079	Telnet Terminal Speed Option
RFC 1084	BOOTP Vendor Information Extensions
RFC 1091	Telnet Terminal-Type Option
RFC 1108	Security Options for the Internet Protocol
RFC 1112	Host Extensions for IP Multicasting Appendix I. Internet Group Management Protocol
RFC 1116	Telnet Line-mode Option
RFC 1139	Echo Function for ISO 8473
RFC 1155	Structure and Identification of Management Information for TCP/IP-based Internets
RFC 1157	Simple Network Management Protocol (SNMP)
RFC 1163	BGP-2 (obsoleted by RFC 1267)
RFC 1164	Application of BGP in the Internet
RFC 1166	Internet Numbers
RFC 1188	Proposed Standard for the Transmission of IP over FDDI
RFC 1191	Path MTU Discovery
RFC 1209	Transmission of IP Datagrams over SMDS
RFC 1212	Concise MIB Definitions

(continued)

Table 2. Standards Supported by Version 11.01 *(continued)*

Standard	Description
RFC 1213	MIB for Network Management of TCP/IP-based Internets
RFC 1267	Border Gateway Protocol 3 (BGP-3)
RFC 1293	Inverse ARP for Frame Relay
RFC 1294	Obsoleted by RFC 1490
RFC 1304	Definition of Managed Objects for the SIP Interface Type
RFC 1305	Network Time Protocol
RFC 1315	Management Information Base for Frame Relay DTEs
RFC 1323	TCP Extensions for High Performance
RFC 1331	Obsoleted by RFC 1661
RFC 1332	PPP Internet Protocol Control Protocol (IPCP)
RFC 1333	PPP Link Quality Monitoring
RFC 1334	PPP Authentication Protocols
RFC 1340	Assigned Numbers (obsoleted by RFC 1700)
RFC 1350	The TFTP Protocol (Revision 2)
RFC 1356	Multiprotocol Interconnect on X.25 and ISDN in the Packet Mode
RFC 1376	PPP DECnet Phase IV Control Protocol (DNCP)
RFC 1378	PPP AppleTalk Control Protocol (ATCP)
RFC 1390	Transmission of IP and ARP over FDDI Networks
RFC 1377	OSI over PPP
RFC 1403	BGP OSPF Interaction
RFC 1434	Data Link Switching: Switch-to-Switch Protocol
RFC 1483	Multiprotocol Encapsulation over ATM AAL5
RFC 1490	Multiprotocol Interconnect over Frame Relay
RFC 1552	The PPP Internetwork Packet Exchange Control Protocol (IPXCP)

(continued)

Table 2. Standards Supported by Version 11.01 *(continued)*

Standard	Description
RFC 1577	Classical IP and ARP over ATM
RFC 1583	OSPF Version 2
RFC 1634	Novell IPX over Various WAN Media (IPXWAN)
RFC 1638	PPP Bridging Control Protocol (BCP)
RFC 1654	Border Gateway Protocol 4 (BGP-4)
RFC 1661	Point-to-Point Protocol (PPP)
RFC 1662	PPP in HDLC-like Framing
RFC 1717	PPP Multilink Protocol (MP), obsoleted by RFC 1990
RFC 1755	Signaling Support for IP over ATM
RFC 1757	Remote Network Monitoring Management Information Base (RMON), for AN, ANH, and ARN equipped with Data Collection Module only
RFC 1762	PPP Banyan VINES Control Protocol (BVCP)
RFC 1763	PPP DECnet Phase IV Control Protocol (DNCP)
RFC 1764	PPP XNS IDP Control Protocol (XNSCP)
RFC 1795	Data Link Switching: Switch-to-Switch Protocol, Version 1
RFC 1819	Internet Stream Protocol, Version 2
RFC 1989	PPP Link Quality Monitoring, obsoletes RFC 1333
RFC 1990	PPP Multilink Protocol (MP), obsoletes RFC 1717
VINES 4.11	The Bay Networks router software works with the Banyan VINES 4.11 standard. Bay Networks Router Software Version 8.10 and later also supports VINES 5.50 sequenced routing.

Supported Flash Memory Cards

Table 3 lists the 2-MB, 4-MB, 8-MB, and 16-MB Personal Computer Memory Card International Association (PCMCIA) standard Flash memory cards that are qualified for use in Bay Networks routers.

Table 3. Approved Flash Memory Cards

Size	Vendor	Part Number
2 MB	AMD	AMC002AFLKA
	Amp	1-797078-3
	Fujitsu	MB98A811220
	Intel	1MC002FLKA
	Maxell	EF21B(AA) WEL.M-20
	Mitsubishi	MF82ML-G1FAT01
	Panasonic	BN-02MHFR
	Texas Instruments	CMS68F2MB-250
4 MB	AMD	AMC004CFLKA-150
	Centennial	FL04M-20-1119
	Centennial	FL04M-20-11138
	IBM	IBM1700400D1DA-25
	Intel	IMC004FLSAQ1381
8 MB	AMD	AMC008CFLKA
	Centennial	FLO8M-25-11119-01
	Intel	IMC008FLSP/Q1422
16 MB	Centennial	FL16M-20-1119-03
	Epson	HWB161BNX2